Stewardship at the Bedside: Engaging Front-Line Providers

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Disclosures

Consultant to Vizient HIIN 3.0 grant from the Centers for Medicare and Medicaid Services (CMS)

Consultant to Agency for Healthcare Research and Quality (AHRQ). “The Comprehensive Unit-Based Safety Program (CUSP) for antimicrobial stewardship”
Resistance
ANTIBIOTIC RESISTANCE THREATS
in the United States, 2013
Estimated minimum number of illnesses and deaths caused by antibiotic resistance*:

At least 2,049,442 illnesses, 23,000 deaths

*bacteria and fungus included in this report
If Antimicrobial Stewardship is proclaimed in the forest only by Infectious Disease docs, will anyone hear it? Will antibiotic resistance really be controlled?
Fig 4. Members of the comprehensive multidisciplinary antibiotic management program (AMP) team at the Hospital of the University of Pennsylvania (Philadelphia, PA). P&T, Pharmacy and Therapeutics.

Multidisciplinary
Fig 4. Members of the comprehensive **multidisciplinary** antibiotic management program (AMP) team at the Hospital of the University of Pennsylvania (Philadelphia, PA). P&T, Pharmacy and Therapeutics.

WHO is MISSING?
The Critical Role of the Staff Nurse in Antimicrobial Stewardship—Unrecognized, but Already There

Richard N. Olans, Rita D. Olans, and Alfred DeMaria Jr

An essential participant in antimicrobial stewardship who has been unrecognized and underutilized is the “staff nurse.” Although the role of staff nurses has not formally been recognized in guidelines for implementing and operating antimicrobial stewardship programs (ASPs) or defined in the medical literature, they have always performed numerous functions that are integral to successful antimicrobial stewardship. Nurses are antibiotic first responders, central communicators, coordinators of care, as well as 24-hour monitors of patient status, safety, and response to antibiotic therapy. An operational analysis of inpatient admissions evaluates these nursing stewardship activities and analyzes the potential benefits of nurses’ formal education about, and inclusion into, ASPs.

Keywords. antimicrobial stewardship; antimicrobial stewardship program; antibiotic resistance; nursing; turnaround time.
Nurses, and Antimicrobial Stewardship

Nurses already perform activities of stewardship, but current models of stewardship programs in hospitals do not integrate their contributions in the stewardship paradigm.

Table 1. Typical In-patient Admission

<table>
<thead>
<tr>
<th>Stewardship Activity or Task</th>
<th>Responsibility Identified in Current ASP Model</th>
<th>Unrecognized Role the Nurse Performs in AS functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate triage &amp; isolation</td>
<td>Infection Preventionist</td>
<td>Initially, the nurse assesses source of infection and appropriate precautions. Consultation may come subsequently from the Infection Preventionist.</td>
</tr>
<tr>
<td>Accurate antibiotic allergy history</td>
<td>Pharmacist</td>
<td>The nurse takes the allergy history, performs medication reconciliation, &amp; records this in the medical record.</td>
</tr>
<tr>
<td>Early &amp; appropriate cultures</td>
<td>Hospitalist Microbiologist</td>
<td>The nurse obtains the cultures before starting antibiotics, &amp; sends the cultures to the microbiology laboratory. The nurse monitors the culture results &amp; reports results to the physician.</td>
</tr>
<tr>
<td>Timely antibiotic initiation</td>
<td>Hospitalist Infectious Diseases Pharmacist</td>
<td>The nurse receives the orders, reviews dose/time for accuracy, checks for allergy, administers &amp; records the antibiotics.</td>
</tr>
<tr>
<td>Stewardship Activity or Task</td>
<td>Responsibility Identified in current ASP Model</td>
<td>Unrecognized Role the Nurse Performs in AS functions</td>
</tr>
<tr>
<td>-----------------------------</td>
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</tr>
<tr>
<td>Progress reporting</td>
<td>Hospitalist Infectious Diseases</td>
<td>The nurse cares for the patient 24/7, monitors &amp; communicates daily patient progress</td>
</tr>
<tr>
<td>Antibiotic adjustment based on Microbiology reports</td>
<td>Hospitalist Infectious Diseases Microbiologist</td>
<td>Laboratory &amp; radiology reports “chase” the patient &amp; are typically received first by the bedside nurse. Results are coordinated by the nurse &amp; communicated to treating physicians</td>
</tr>
<tr>
<td>Antibiotic dosing, Culture &amp; Sensitivity reporting, &amp; De-escalation</td>
<td>Infectious Diseases Microbiologist Pharmacist</td>
<td>The nurse updates clinical &amp; laboratory renal function results, drug levels, &amp; preliminary / final microbiology results</td>
</tr>
<tr>
<td>Patient Safety Monitoring:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adverse events</strong></td>
<td><strong>Hospitalist Pharmacist</strong></td>
<td><strong>The nurse monitors &amp; reports to the physician &amp; pharmacist any adverse events</strong></td>
</tr>
<tr>
<td><strong>Antibiotic orders</strong></td>
<td><strong>Hospitalist Infectious Diseases</strong></td>
<td><strong>The nurse reviews the patient’s clinical status &amp; changes in medications</strong></td>
</tr>
<tr>
<td><strong>Antibiotic resistance</strong></td>
<td><strong>Infectious Diseases Hospitalist Microbiologist</strong></td>
<td><strong>The nurse reviews culture &amp; sensitivity results, &amp; reports bug/drug mismatches</strong></td>
</tr>
<tr>
<td><strong>Superinfection / Resistant Infection</strong></td>
<td><strong>Infectious Diseases Infection Preventionist Microbiologist</strong></td>
<td><strong>The nurse monitors patient response &amp; initiates appropriate changes in isolation precautions</strong></td>
</tr>
<tr>
<td>Stewardship Activity or Task</td>
<td>Responsibility Identified in Current ASP Model</td>
<td>Unrecognized Role the Nurse Performs in AS functions</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Transition I.V. to P.O. antibiotic, Out Patient Antibiotic Therapy (OPAT)</td>
<td>Case Management, Infectious Diseases, Pharmacist</td>
<td>The nurse monitors clinical progress &amp; patient’s capacity to take oral medications</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>Administration, Case Management, Infectious Diseases</td>
<td>The nurse monitors the patient’s progress 24/7</td>
</tr>
<tr>
<td>Patient education, Medication reconciliation</td>
<td>Hospitalist, Infectious Diseases, Pharmacist</td>
<td>The nurse continuously educates the patient &amp; family, and performs discharge teaching</td>
</tr>
<tr>
<td>Out-patient Visiting Nurse Association (VNA)/ Skilled Nursing Facility (SNF)/ Long-Term Care Facility (LTCF) transition management, readmission to hospital</td>
<td>Administration, Case Management, Infection Preventionist</td>
<td>The nurse communicates the patient’s diagnosis, management, &amp; medications to the nurse at the VNA/ SNF/ LTCF</td>
</tr>
</tbody>
</table>
What Happens When Nurses Are Engaged

**Pennsylvania**

FIGURE. Central line–associated bloodstream infection rate* in 66 intensive care units (ICUs), by ICU type and semiannual period — southwestern Pennsylvania, April 2001–March 2005

* Pooled mean rate per 1,000 central line days.
† Includes cardiothoracic, coronary, surgical, neurosurgical, trauma, medical, burn, and pediatric ICUs.
§ p<0.001.

[MMWR 2005;54:1013-16]

**Michigan**

- 103 ICUs at 67 Michigan hospitals, 18 months


[Slide courtesy of Arjun Srinivasan, MD]
Antimicrobial Stewardship Workflow Communication

Critical Role of Bedside Nurses- Lessons Learned From CLABSI Prevention

• Nurses can play a critical role when they know the process and can watch for omissions.

• Nurses are key in prompting the provider/team to perform key actions that might get overlooked.

• Nursing time-outs in this model enhance patient safety and have demonstrably achieved superior outcomes.
The National Quality Forum conducted a 2-year project to assemble all parties to share their expertise in Antimicrobial Stewardship Programs.

http://www.qualityforum.org/Publications/2016/05/Antibiotic_Stewardship_Playbook.aspx
PARADIGM SHIFT
OLD

Antibiotics as miracles
(“No downside risk, so why not try?”)

NEW

Antibiotics: Good when used well, better when used thoughtfully
OLD

“Here’s an antibiotic for your URI”
(immediate antibiotic gratification)

NEW

Preserving your healthy microbiome

- C. difficile
OLD

“A few days of prophylaxis”

New

Single dose surgical prophylaxis
OLD

Every patient with fever is potentially antibiotic resistant
“Big Guns”
Anxiety-driven Abx Rx
(“just in case”)

New

Over-treating patients selects for MDROs
(antibiotic restraint)

MDRO

mdro
**OLD**

Antibiotic inertia
(“It’s working”)
Duration rule of 5s & 7s
(fingers and calendars)

**NEW**

Antimicrobial Stewardship
(de-escalation, abx timeouts)
*Less is more*
*Shorter is better*
OLD

>100,000 colonies of resistant organism on urine culture *always* requires antibiotics

NEW

Asymptomatic bacteriuria does not need antibiotics

*Sx-*->*Rx*

*Asx-*->*No Abx*
Old TAT
Turn Around Time

New TTI
Time To Intervention
Effective Antimicrobial Stewardship
Antimicrobial Stewardship Workflow Communication

Improving Antibiotic Use - Potential Roles for Bedside Nurses

- patient response
- recent antibiotic use
- *C. diff*
- antibiotic allergies
- appropriate cultures
- interdisciplinary communication
- cross-disciplinary liaisons
<table>
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<tr>
<th>Profession</th>
<th>Very High</th>
<th>High</th>
<th>Average</th>
<th>Low</th>
<th>Very Low</th>
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<tr>
<td>Nurses</td>
<td>29</td>
<td>55</td>
<td>13</td>
<td>2</td>
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<tr>
<td>Pharmacists</td>
<td>15</td>
<td>52</td>
<td>26</td>
<td>6</td>
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<td>Medical doctors</td>
<td>15</td>
<td>50</td>
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<tr>
<td>Engineers</td>
<td>13</td>
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<td>Clergy</td>
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<td>32</td>
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<tr>
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<td>45</td>
<td>10</td>
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<tr>
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<td>8</td>
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</table>

Dec. 7-11, 2016

GALLUP

By recognizing and better understanding each others’ roles and contributions to antimicrobial stewardship, we create a safer, more collaborative, and better integrated interdisciplinary antimicrobial stewardship process. In doing this, we improve both our individual patient’s as well as the broader public’s health, now and in the future.
Thank you for your patients

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